

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-24. (Cancelled)

25. (Currently amended) A method for manufacturing a thin-film magnetic head having a soft magnetic film, -including a lower core layer, an upper core layer, and a magnetic pole portion which is provided between the lower core layer and the upper core layer and which has the width in the track width direction formed smaller than that of each of the lower core layer and the upper core layer, the method comprising:

_____ a step of forming a $Co_xFe_{y,\alpha,z}$ alloy film by electroplating in a plating solution having a Fe ion concentration in the range of 1.0 to 2.0 g/l using a pulse current, wherein the component ratio X of Co is 8 to 48 mass%, the component ratio Y of Fe is 50 to 90 mass%, the component ratio Z of the element α (the element α is at least one of Ni and Cr) is 2 to 20 mass%, and the equation $X + Y + Z = 100$ mass% is satisfied.

_____ forming a lower magnetic pole layer in contact with the lower core layer, an upper magnetic pole layer in contact with the upper core layer, and a gap layer provided between the lower magnetic pole layer and the upper magnetic pole layer so as to form the magnetic pole portion; or,

_____ forming an upper magnetic pole layer in contact with the upper core layer, and a gap layer provided between the upper magnetic pole layer and the lower core layer so as to form the magnetic pole portion,

wherein at least one of the upper magnetic pole layer and the lower magnetic pole layer is formed of a soft magnetic film by a method of plating, the method comprising:

forming a $\text{Co}_x\text{Fe}_y\alpha_z$ alloy film by electroplating in a plating solution having a Fe ion concentration in the range of 1.0 to 2.0 g/l a ratio of Fe ion concentration to Co ion concentration of 1.5 or more and a ratio of Fe ion concentration to α ion concentration of 2 to 3.4, using a pulse current, wherein the component ratio X of Co is 23.3 to 28.3 mass%, the component ratio Y of Fe is 63 to 67.5 mass%, the component ratio Z of the element α (the element α is at least one of Ni and Cr) is 4.2 to 13.6 mass%, and the equation $X + Y + Z = 100$ mass% is satisfied

26. -27. (Cancelled)

28. (Original) A method for manufacturing a soft magnetic film according to Claim 25, wherein the plating is performed in a plating solution having a ratio of Fe ion concentration to Co ion concentration of 1.7 or more and a ratio of Fe ion concentration to α ion concentration of 2 to 3.4, whereby a $\text{Co}_x\text{Fe}_y\alpha_z$ alloy film is formed in which the component ratios, X of Co, Y of Fe, and Z of the element α , are in the area surrounded by three points (X, Y, and Z) of (26.5, 64.6, and 8.9 mass%), (25.5, 63, and 11.5 mass%), and (23.3, 67.5, and 9.2 mass%), and the equation $X + Y + Z = 100$ mass% is satisfied.

29. (Original) A method for manufacturing a soft magnetic film according to Claim 25, wherein the plating solution contains sodium saccharin.

30. (Original) A method for manufacturing a soft magnetic film according to Claim 25, wherein the plating solution contains 2-butyne-1,4-diol.

31. (Original) A method for manufacturing a soft magnetic film according to Claim 25, wherein the plating solution contains sodium 2-ethylhexyl sulfate.

32. – 34. (Cancelled)

35. (Currently amended) A method for manufacturing a thin-film magnetic head according to Claim [[34]] 25, wherein the upper magnetic pole layer is formed of the soft magnetic film by plating, and the upper core layer is formed of an NiFe alloy film by electroplating on the upper magnetic pole layer.

36. (Currently amended) A method for manufacturing a thin-film magnetic head according to Claim [[34]] 25, wherein either at least one of the upper core layer and the lower core layer has a portion in contact with a magnetic gap and composed of at least two magnetic layers, or at least one of the upper magnetic pole layer and the lower magnetic pole layer is composed of at least two magnetic layers, a magnetic layer in contact with the magnetic gap among the magnetic layers being formed of the soft magnetic film by plating.

37. (Original) A method for manufacturing a thin-film magnetic head according to Claim 36, wherein the magnetic layers other than the magnetic layer in contact with the magnetic gap layer are formed of an NiFe alloy by electroplating.

38. (New) The method of Claim 25, wherein the saturated magnetic flux density B_s of the soft magnetic film is 2.2 T or more and the center line average roughness is 5 nm or less.